Application No.: 10/708,394   Docket No.: 22040-00030-US

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all previous versions and listings of claims in this application.

Claim Listing:

1.   (Currently amended) A sound quality adjusting device for causing an input sound signal to pass through a plurality of FIR digital filters, controlling gains of output signals from the plurality of FIR digital filters, summing sound signals having been subjected to gain control, and outputting a sum, the device comprises comprising:

a first FIR filter for multiplying a signal of each tap of a tapped delay line by several times according to given first filter factors and then performing addition and output, the delay line being made up of a plurality of delay units; and

a second FIR filter for multiplying a signal of each tap of a tapped delay line by several times according to given second filter factors and then performing addition and output, the delay line being made up of a plurality of delay units;

wherein

the first filter factors have a symmetrical sequence in which values are set so that a sum is not zero and a sum of every other terms term is equal to a sum of the other every other terms term with the same signs; and

the second filter factors have a symmetrical sequence in which values are set so that a sum is zero and a sum of every other terms term is equal to a sum of the other every other terms term with opposite signs.

2.   (Original) The sound quality adjusting device according to claim 1, in the second filter factors, signs of values other than a median of the sequence of the first filter factors are changed while causing absolute values of the sequence to remain the same.

3

Application No.: 10/708,394   Docket No.: 22040-00030-US

3.   (Original) The sound quality adjusting device according to claim 1, in the second filter factors, signs of values other than a median of the sequence of the first filter factors are changed while causing absolute values of the sequence to remain the same, and the median of the sequence is subtracted from a reference value.

4.   (Original) The sound quality adjusting device according to claim 1, the sequence of the first filter factors is composed of ratios of -1, 0, 9, 16, 9, 0, and -1 and the sequence of the second filter factors is composed of ratios of 1, 0, -9, 16, -9, 0, and 1.

5.   (Currently amended) The sound quality adjusting device according to claim 1, wherein at least one of the first FIR filter and the second FIR filter is cascaded to a subsequent stage of comprising a filter duplicating at least one of the first FIR filter and the second FIR filter.

6.   (Currently amended) The sound quality adjusting device according to claim 1, wherein the first FIR filter and the second FIR filter are cascaded in parallel to a subsequent stage of the comprising another first FIR filter, the first FIR filter and the second FIR filter are being cascaded in parallel to a subsequent stage of the second FIR filter,

wherein control is performed on a gain of an output signal from each of the cascaded FIR filters in the subsequent stage, and sound signals having been subjected to gain control are summed and outputted.

7.   (Currently amended) A filter An FIR filter device, comprising:

a first FIR filter for multiplying a signal of each tap of a tapped delay line by several times according to given first filter factors and then performing addition and output, the delay line being made up of a plurality of delay units; and

a second FIR filter for multiplying a signal of each tap of a tapped delay line by several times according to given second filter factors and then performing addition and output, the delay line being made up of a plurality of delay units;

4

Application No.: 10/708,394   Docket No.: 22040-00030-US

wherein

the first filter factors have a symmetrical sequence in which values are set so that a sum is not zero and a sum of every other ~~terms~~ term is equal to a sum of the other every other ~~terms~~ term with the same signs; and

the second filter factors have a symmetrical sequence in which values are set so that a sum is zero and a sum of every other ~~terms~~ term is equal to a sum of the other every other ~~terms~~ term with opposite signs.

8.   (Original) The filter device according to claim 7, in the second filter factors, signs of values other than a median of the sequence of the first filter factors are changed while causing absolute values of the sequence to remain the same.

9.   (Original) The filter device according to claim 7, in the second filter factors, signs of values other than a median of the sequence of the first filter factors are changed while causing absolute values of the sequence to remain the same, and the median of the sequence is subtracted from a reference value.

10.   (Original) The filter device according to claim 7, the sequence of the first filter factors is composed of ratios of -1, 0, 9, 16, 9, 0, and -1 and the sequence of the second filter factors is composed of ratios of 1, 0, -9, 16, -9, 0, and 1.

11.   (Original) The filter device according to claim 7, at least one of the first filter and the second filter is cascaded to a subsequent stage of at least one of the first filter and the second filter.

12.   (Currently amended) A sound quality adjusting method, comprising:

a first filtering step, implemented by a first FIR filter, of multiplying a signal of each tap of a tapped delay line, which delays an input sound signal, by several times by using first filter factors and then performing addition and output, the first filter factors having a symmetrical

5

Application No.: 10/708,394   Docket No.: 22040-00030-US

sequence in which values are set so that a sum is not zero and a sum of every other ~~terms~~-is equal to a sum of the other every other ~~terms~~-term with the same signs;

a second filtering step, implemented by a second FIR filter, of multiplying a signal of each tap of a tapped delay line, which delays an input sound signal, by several times by using second filter factors and then performing addition and output, the second filter factors having a symmetrical sequence in which values are set so that a sum is zero and a sum of every other ~~terms~~-term is equal to a sum of the other every other ~~terms~~-term with opposite signs;

a gain controlling step of controlling a gain of a sound signal having passed through the first ~~filtering step~~-FIR filter and a gain of a sound signal having passed through the second ~~filtering step~~ FIR filter; and

a summing step of summing the sound signals having undergone gain control in the gain controlling step and outputting a sum.

13.   (Original) The sound quality adjusting method according to claim 12, the sequence of the first filter factors is composed of ratios of -1, 0, 9, 16, 9, 0, and -1 and the sequence of the second filter factors is composed of ratios of 1, 0, -9, 16, -9, 0, and 1.

14.   (Currently amended) ~~A filter~~-An FIR filter designing method for designing ~~a plurality of~~-FIR digital filters, the method comprising:

setting ~~in which~~-frequency characteristics ~~are~~-to be complementary to each other and allowing a total gain of the FIR digital filters ~~serves~~-to serve as a reference value at all frequencies~~,~~;

establishing ~~based on~~-first filter ~~factors~~-coefficients having a first symmetrical sequence in which ~~values are set so that~~-a sum of the first filter coefficients is not zero and a sum of every other ~~terms~~-coefficient in the first symmetrical sequence is equal to a sum of ~~the other~~-every other ~~terms with~~-coefficient having ~~the~~-a same ~~signs,~~-sign;

6

Application No.: 10/708,394   Docket No.: 22040-00030-US

changing the sequence of the first filter ~~factors is changed, so that~~ coefficients and determining second filter ~~factors~~ coefficients having a second symmetrical sequence ~~are determined~~ in which ~~values are set so that~~ a sum of the second filter coefficients is zero and a sum of every other ~~terms~~ coefficient in the second symmetrical sequence is equal to a sum of the other every other ~~terms~~ coefficient ~~with~~ having an opposite ~~signs, and~~ sign.

wherein the first filter ~~factors~~ coefficients and the second filter ~~factors~~ coefficients are used, respectively, as the filter factors of ~~the plurality of~~ first and second FIR digital filters.

15.   (Canceled).

7